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Patent Claims

1. An installation for the aftertreatment of an exhaust gas generated by a combustion device, in particular a motor vehicle internal combustion engine, having

- a nitrogen oxide storage catalytic converter (6), and
- an SCR catalytic converter (7) with the ability to store ammonia, which is arranged downstream of the nitrogen oxide storage catalytic converter or integrated with the latter in a common catalytic converter unit (14),

characterized by

- a particulate filter (5) upstream of the nitrogen oxide storage catalytic converter (6) or between the nitrogen oxide storage catalytic converter and the SCR catalytic converter (7) or downstream of the SCR catalytic converter, and/or
- an NO_2-producing catalytic converter (13) upstream of the SCR catalytic converter (7).

2. The exhaust gas aftertreatment installation as claimed in claim 1, also characterized by an NO_2-producing catalytic converter (13) whereof the catalyst material allows ammonia contained in the exhaust gas when the exhaust gas composition is rich to pass through without a conversion reaction.

3. The exhaust gas aftertreatment installation as claimed in claim 1 or 2, also characterized by a first oxidation catalytic converter (4) as the first exhaust

gas aftertreatment component, as seen in the direction of flow of the exhaust gas.

4. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 3, also characterized by a second oxidation catalytic converter (4) as the last exhaust gas aftertreatment component, as seen in the direction of flow of the exhaust gas.

5. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 4, also characterized by an oxidation catalytic converter (4) connected directly upstream of the particulate filter (5).

6. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 5, also characterized in that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter (15), which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas.

7. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 6, also characterized by means (9) for recording the NO_x content in the exhaust gas downstream of the nitrogen oxide storage catalytic converter (6) and/or downstream of the SCR catalytic converter (7).

8. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 7, also characterized by means (2, 9) for recording the ammonia loading of the SCR catalytic converter and/or the ammonia content in the exhaust gas downstream of the nitrogen oxide

storage catalytic converter and/or the SCR catalytic converter.

9. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 8, also characterized by means (8) for recording the temperature of the nitrogen oxide storage catalytic converter (6), of the SCR catalytic converter (7) and/or of the particulate filter (5).

10. The exhaust gas aftertreatment installation as claimed in one of claims 1 to 9, also characterized by a plurality of parallel upstream exhaust train sections, which are combined to form a subsequent common, downstream train section, the particulate filter (5) being arranged in the downstream train section, and a nitrogen oxide storage catalytic converter (6) being arranged in each of the parallel upstream train sections.

11. A method for the aftertreatment of an exhaust gas generated by a combustion device, in particular a motor vehicle internal combustion engine, in which

- nitrogen oxides contained in the exhaust gas are temporarily stored in a nitrogen oxide storage catalytic converter during adsorption operating phases of the latter and are released again from the nitrogen oxide storage catalytic converter during regeneration operating phases of the latter, with ammonia being generated, and
- ammonia which is generated is temporarily stored in a downstream SCR catalytic converter and is used for nitrogen oxide reduction,

characterized in that

- the recorded nitrogen oxide content of the

exhaust gas downstream of the SCR catalytic converter and/or downstream of the nitrogen oxide storage catalytic converter and/or the ammonia loading of the SCR catalytic converter is used as a criterion for the instant at which a regeneration operating phase is triggered for the nitrogen oxide storage catalytic converter.

12. A method for the aftertreatment of an exhaust gas generated by a combustion device, in particular as claimed in claim 11, in which

- nitrogen oxides contained in the exhaust gas are temporarily stored in a nitrogen oxide storage catalytic converter during adsorption operating phases of the latter and are released again from the nitrogen oxide storage catalytic converter during regeneration operating phases of the latter, with ammonia being generated, and
- ammonia which is generated is temporarily stored in a downstream SCR catalytic converter and is used for nitrogen oxide reduction,

characterized in that

- a desired ammonia generation quantity which is to be generated during a current regeneration operating phase of the nitrogen oxide storage catalytic converter is determined, and the subsequent regeneration operating phase is carried out as a function of the desired ammonia generation quantity determined.

13. The method as claimed in claim 12, also characterized in that the condition whereby the recorded exhaust gas air ratio downstream of the nitrogen oxide storage catalytic converter drops below a threshold value ($\lambda 1$, $\lambda 2$), which is predetermined as a function of the desired ammonia generation quantity, is

used as a criterion for terminating a respective regeneration operating phase of the nitrogen oxide storage catalytic converter.

14. The method as claimed in one of claims 11 to 13, also characterized in that during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda<1$) by reducing agent being fed to the exhaust gas.

15. The method as claimed in one of claims 11 to 14, also characterized in that the combustion device, during the regeneration operating phases of the nitrogen oxide storage catalytic converter, is at least from time to time operated under rich-burn conditions ($\lambda<1$) and secondary air is added to the exhaust gas upstream of one or more of the exhaust gas aftertreatment components.